was contracted. There is no pretence that the bonds were not issued in strict conformity to law. and nothing to show that the holders of the bonds did not invest in them in good faith, believing them hands of foreign owners is conclusive proof to the

Respecting the charge of Republican extravagance in Georgia a few words may be said. The Republican officials of that State were almost without exception vatives of Georgia, and they were the peers in intelligence, social position and wealth of any who had held the offices before them. They were as much interested in the welfare of the State being Republicaus, and that had to be punished, even

at the expense of the honor and credit of the State. The facts are that the average expenses of the State Government under the three years of Republican administration were about \$60,000 a year less than those of the Democratic administration which immediately preceded it. The expenses of the first Democratic Legislature after reconstruction were about \$1,000 a month greater than those of the Re-State purposes was four mills on a dollar. The Demexemption of property to the amount of \$200 for each taxpaver which was before allowed.

A Democratic legislative committee investigated were made against the Republican Governor. The testimony taken during this investigation was used for political purposes, as well as to nourish the re- tee said: pudiation sentiment. It was then made the basis of a criminal prosecution of the Governor. After years of delay the case was brought to trial in a Georgia court, and all the witnesses who had testified before the committee were again examined. The result of the trial was a triumphant acquittal but in the meantime the real purpose of the charges had been realized by the repudiation of the debt. As the Governor had been held personally responsible for all the alleged fraud and corruption of the Republican State administration, especially in regard to the supposed fraudulent issues of bonds to aid railroad companies, his acquittal by a Georgia court composed of Democrats is quite good evithence that the bonds were honestly and lawfully issned, and that the State is bound by every consideration of honesty and justice to pay them.

Like all the other Southern States, Georgia pleads poverty as another excuse for dishonesty. In order to justify this plea, property seems to have been assessed, especially in more recent years, at a small fraction of its value. In 1866 the a-sessed valuation of faxable property was \$207,000,000; in 1870 H was \$226,000,000, and the census valuation exactly what it was eight years before.

In 1870, according to the census report, the value of the agricultural productions of Georgia was \$85,000,000, but all the lands in the State, improved and unimproved, were assessed at only \$95,000,000 the same year. In 1878 the assessed valuation of land was but \$86,000,000. While the shock of reputiation has doubtless done much to hardly probable that it has caused a depreciation of when the funding operations were completed the nearly \$12,000,000 a year for the last three years, debt would amount to \$12,136,166. He reported which it will be observed has actually been the rate of decrease in the valuation of property according to the Assessors' reports.

beginning of the war amount of to \$10,000,000, Of closed, was never built. this amount \$2,362,000 had been incurred on account of six rulroad companies. Two of these companies, which had together received \$5.53,600 in one of the purposes being to repudiate some more. railroad. In 1865, the neof and mathers, exchanging a debt of \$13,562,500 contracted in aid of the Rebellion, amounted to \$13,358,000; and in 1868, when the reconstructed State Government was inaggrated, to \$17,347,051. Of this last sum toes, in consequence of the food professions made payment of which corporations were primarily re- to such an extent that they were compelled to sussponsible. Besides the bonded debt there was "mis-cellaneous" indebtedness, much of which had been were only saved from the same fate by hasty remittimate, to \$29,000,000.

tions in excess of funds in the Freesury, and of current receipts. This attempt was defeated by the action of the Supreme Court of the State, and the real hostility of Louisiana Democrats is to the payment of their honest debts. bonds of several issues were declared void. In a table of defaulting State debts, sublished November 14, 1874, The Financial Chronicle estimated the debt of Louisiana at \$24,433,000, all of which was in default on account of interest, and \$10,000,000 of

The large increase in the debt of Louisiana during the six years from 1868 to 1874, was mainly due to the issue of bonds to raise funds to build and repair levees, to aid in the construction of railroads, and to pay the ordinary and extraordinary expenses of the entire debt, but recommended that the interof the State Government. The bonds for levees and railroads were issued with the approval of both political parties, and the laws under which they were issued received the votes of Democrats as well as of Republicans in the Legislature. The question of using the credit of the State for these purposes was never regarded as a partisan one at that time. But it was openly charged by the Governor of the State that some of the acts granting State aid, which were passed ever his veto, were carried by corrupt means. There is little room to doubt that many of these grants were jobs, and that the bonds were fraudulently authorized. But for this one political party was as much responsible as the other, and it is certain that the Republican Governor did all he could to prevent it. The frequent political disturbances in the State made the execution of the laws very difficult, and the expenses of the State Government appear for this reason to have exceeded the amount received from

Statements of the contingent and floating debt of the State, and even of the bonded indebtedness, are so conflicting that one despairs of finding a trustworthy and accurate account. On January 1, 1875, the State Auditor reported the bonded indebtedness at \$21,872,320, warrants \$1,423,985, total \$23,296,305. But this statement was silent respecting \$5,488,602 of contingent indebtedness reported by him the previous year. Be fore this a grant of \$2.500,000 to the New-Orleans and Chattanooga Radroad had been declared void by the Supreme Court of Louisiana, and it is not known whether this sum was included in the contingent debt, as reported January 1, 1874, or not. In a statement made by Governor Kellogg, in 1875, he estimated "the bonded and floating debt, January 1, 1874, at \$24,832,407. The Financial Chronicle (January, 1877.) estimated the total amount of obligations issued" at \$27,185,433, and the amount "acknowledged" at \$11,867,155. It is probably quite

to a greater or less extent, secured by hens on valuable railroad property. This form of indebtedness has long existed in Louisiana. So long ago as 1837 | but Democratic votes. Every Republican member to be valid obligations of the State of Georgia. The | that State granted aid to railroads to the amount of fact that a large proportion of these bonds is in the | \$1,200,000. These loans, however, do not appear | Democratic members opposed it and voted against to have been secured by any property lien on the roads, which, indeed were not in existence at the time, if they ever were afterward.

within the first six years after reconstruction was | shost of a chance for success. extravagantly large compared with the benefits derived, it did not greatly exceed the State debt at a period long anterior to the rebellion. The amount of that debt was reported by the Secretary of the as any Democrats could be. Their crime was in Treasury in 1842, in response to a resolution of Congress, to be \$23,985,000. To this should be added \$637,000 on account of United States surplus revenue d posited with the State in 1837. This would make a total of \$24,622,000, a sum only \$2,378,000 less than the debt in 1874, which had

her creditors, and offered to fund the debt in newpublican Legislature which preceded it. Under the | bonds bearing 7 per cent interest, for 60 per cent of Republican administration the rate of taxation for the face of the old debt. A law to enforce this provide for the recognition and payment of the reproposition was enacted in January, 1874. This | pudiated bonds, but the opposition of the Democrats raised the rate to five mills, and have abolished the | Louisiana bonds, and in reply to a letter from Gov- | There seems to be no prospect whatever that the law evoked sharp criticism from the holders of ernor Keiloge explaining the act and arging its necessity, a committee wrote, February 7, 1874, calling his attention to the fact that while the rate of the numerous charges of corruption and frand which | taxation in New-York for State purposes was 34 mills, in Louisiana it was but 2372 mills. Respecting the character of the Funding Law the commit-

It is simply a proposition of a forced purchase from present holders at the cate of 60 ceats on the dellar of the outstanding obligations of a Commonwealth which, as the Governor has so abusing the story, is perfectly and to discharge those obligations in full. Too mult of such unnecessary and even wanton resudiation would be almost without parallel, and we cannot believe that the citizens of Louisiana will them it, and thus destroy at one blow a wall-carried character for scrupulous honcesty which their state has hitherto bettee.

alike responsible, the State of Louisiana repudiated two-fifths of its debt, and clothed itself with dishonor. The debt thus scaled and established was then declared by a Constitutional amendment, adopted in May, 1874, to be "a valid contract between the State and each and every holder of said bonds, which the State shall by no means and in no wise impair ": an interest tax of 5 mills was also established by the Constitution.
In June, 1875, Governor Kellege reported the

anount of the State debt to be \$21,279,000, and the yearly interest charge \$1,050,000. In October, 1877, an association of English capitalists proposed to lend the State \$12,950,000 on five per cent bonds it at \$240,000,000; in 1875 it was \$261,000,000; running forty-five years, if the State would call in in 1876 it was \$215,000,000; in 1877 it was and pay off her outstanding debt. This proposition \$285,000,000; and in 1878 it was \$226,000,000, or appears to have been called out by the expressions in favor of further repudiation, which began to multiply as soon as the Nicholis Government was fairly installed. The offer was not accepted.

The State debt and limbilities of Louisiana at the pany in exchange for its stock. This road, it is de-

State bonds had not, it is said, built a saugle mate of | of the State debt. The more unauthorized avowal railroad. In 1865, the debt and liabilities, exclud- of this purpose caused a monetary panic and the augurated, to \$17,347.05I. Of this last sum \$185,000,000 had been contracted to procure funds by the Democrats when they gained political the repair levees damaged during the war, and to replace those destroyed; \$2,500,000 had been subscribed for railroad stocks; \$750,000 granted as a processor of the State, that its credit should be preserved at any sacrifice. The refusal of processor of the Board with breaking faith, Commissioner Ayres, and charged the Pemocratic members of the Board with breaking faith, Commissioner Ayres, and charged the processor of the Democratic members of the Board with breaking faith, Commissioner Ayres, and charged the processor of the Democratic members of t debt and interest had been funded. Three years debt and interest had been funded. Three years of the repudiation sentiment in the dominant later (1871) the State Auditor reported the bonded later (1871) the Repudiation sentiment in the dominant merely agreed to give them some of the appointments in their own districts. Fresident O'Donnel called another member of the Board to the charge. This section can hardly full to be found and impaired the capital of some of the appointments in their own districts. Fresident O'Donnel called another member of the Board to the charge. This section can hardly full to be found then attacked the Republicans in a bitter, and the attacked the Republicans in a bitter of much service and the finely dotted, called another member of the Board to the charge. debt and interest had been funded. Three years of the repudiation sentiment in the dominant Incurred before the war, and which amounted to tances from New-York, in response to appeals by tel-\$3,187,000. The total debt therefore for which the egraph for aid. A good many Northern and foreign State was absolutely or contingently liable, capitalists were as much the victims of misplaced amounted, in round numbers, according to this es- confidence as the New-Orleans bankers. Many of them thought that the refusal to pay taxes was due In his message of 1872 the Governor reported the | to hostility to the Republican State accumistration, interest bearing debt at \$19,858,000, and the and that under the new regime taxpavers would yearly interest charge at \$1,403,000. In 1870, an promptly respond to the demands which all knew amendment to the State Constitution was adopted, they were fully able to pay. Accordingly, Louisiwhich provided that the State debt should never and bonds, which were quoted at 64 at the close of exceed \$25,000,000 prior to the year 1500. The Governor Packard's administration, rapidly rose to Legislature appears to have sought to evade this 85. In March, 1879, they had declined to 48, and constitutional prohibition by making appropria- in July to 36. It has been discovered that hostility is to the payment of their honest debts.

In May, 1879, the State Auditor reported to the

Constitutional Convention that the amount of taxes collected from 1870 to 1878 was \$18,339,169, and the amount of taxes due and unpaid for the same period was \$11,345,832, or about 38 per cent which was estimated to be in the hands of foreign of the amount levied. The rate of faxation had varied from 231g to 11 mills. The Committee on State Debt in the convention presented a majority and a minority report. The majority report recommended the repudiation of all but \$4,000,000 of the debt. The minority report advocated the payment est be reduced from 7 to 4 per cent. On June 20 the convention, by a vote of 85 to 28, limited the rate of taxation to 5 mills for all purposes. At this rate it would, of course, be impossible to pay the ordinary expenses of the State Government and have anything left with which to pay the interest on the public debt.

This action was afterward reconsidered, and the convention adopted, July 21, an ordinance which is to be submitted to the people for ratification. This ordinance, which was passed by a vote of 73 to 41, recognizes the validity of the consolidated bonds, but repudiates the interest which will become due January 1, 1880, and also apparently the interest now overdue. No provision appears to have been made for the unfunded bonds. Any money to the credit of the interest fund on the 1st of next January is to be used to pay the general expenses of the State Goverament. Hereafter instead of the 7 per cent interest guaranteed to the creditors of the State by the Constitutional amendment of 1874 they are to receive for the first five years two per cent; for the next fifteen years 3 per cent, and 4 per cent thereafter. Or they may surrender their 7 per cent bonds and receive 75 per cent of their face value in bonds bearing 4 per cent. The interest tax which was fixed at 5 mills by the Constitutional amendment adopted in 1874, is reduced to 3 mills. If the ordinance is adopted, as in all probability it will be, the amount out of which Louisiana will have cheated her creditors, as far as can be ascertained and estimated will be as follows:

.. \$29,115,000 For this digraceful condition of affairs the Democratic party of Louisiana is responsible. After helping by their votes to create the debt, and being

votes in favor of those propositions were east by them, and the scheme finally adopted received none of the convention and an insignificant minority of it. If this scheme is not ratified by the "people" Louisiana it will be because a majority of the Democrats have determined to wipe out the whole While there is no doubt that the debt contracted | debt. No proposition of decent honesty stands the

VII. MISSISSIPPI.

The disgrace of repudiation was achieved by Mississippi when that State was under Democratic control, and long before "carpet-bag governments" were heard of in the South. The debt was contracted between 1830 and 1838, and amounted to \$7,000,000. With accrued interest it now amounts to about \$23,000,000. It is estimated that fivebeen largely contracted to repair the damages and losses of the rebellion.

In 1873 Leuisiana proposed a compromise with the Rebellion. In 1872, when the State was in Republican hands, some efforts were made by them to was so fierce and powerful that nothing was done sheappi, and bought her bonds, will ever recover any part of their investment.

HUDSON COUNTY COMPLICATIONS.

ACTION OF THE BOARD OF PREEROLDERS-THE FIRE

CULTY.

The Board of Chosen Freeholders of Hadson Thursday afternoon. The Board is composed of eight Republicans and eight Democrats, besides the siding officer, who is also a Democrat. Mr. McDon- it doubtless extended over many millions of aid is a candidate for recilection, and it has been years, the protests of the State's creditors; and by this act, for which Democrats and Republicans were own personal ends he and some of his friends had arranged with some of the Republican and Demoeratic members to give some of the most important | offices in the county to members of the former parity. Yesterday a motion was made to choose a Warden for the County Almshouse, and Edward B. Jenning was elected to the position. Freeholder Gaspon (Dem.) energed his brother Democrats with making a "deal" with the Republicans. He made a motion to adjourn but it was voted down, and Joseph W. Bownes and Nicholas Pierce, both Republicans, were elected Warden and Deputy-Warden of of the beds is much exaggerated. As the County Penitentiary respectively. Mr. Gannon then sprang to his feet in great excitement and protested against the action.

Another motion to adjourn was lost, and Philip Mulliran (Dem.) was unde storekeeper of the county institutions at Snake Hill; Edward Keily (Dem.) was reflected Superintendent of the County Grounds and Buildings, and Charles F. Hutton (Rep.) was made engineer of the Court House. When Presholder Gamon charged his tellow Demo-The State Auditor reported, Jamary 1, 1879, that the amount of bonds finded to date under the act of 1874 was \$19,550,122, for which new consolidated bonds for the amount of \$11,730,073 had been issued. There were still outstanding \$1,647,820 of old bonds and warrants. The Auditor estimated that There were still outstanding \$1,647.820 of old bonds and warrants. The Auditor estimated that when the funding operations were completed the debt would amount to \$12,130,166. He reported that there were outstanding old bonds, not fundable, amounting to \$3,971,000. According to this calculation the total debt, recognized and in secondary and in the normal substantiant of the men in the clarification of the \$10,107,166. Among the bonds which were funded were \$141,000 issued in 1837 to the New-Orleans and Nashville Railroad Company in exchange for its stock. This road, it is declared, was never built.

A Constitutional Convention was called in January, 1879, to meet at New-Orleans in April, 1879, one of the purposes being to repudiate some more of the State debt. The more unauthorized avexal of this purpose caused a monetary panic and the suspension of several banks in New-Orleans, even before the convention assembled. These banks had made heavy investments in Louisiana securities, in consequence of the loud professions made by the Democrats when they gained political to the Democrats when they gained political by the Democrats when they gained political to the Democrats when they gained political by the Democrats when they gained political components in their own districts, but the Democrats had anied to keep their pleuges. President O'Donnell had endeavored to smooth over the matter, and said he would keep his agreement, and that the matter would come out air right in time. The Republicans were tred, Commissioner Ayres declared, of waiting, and now deminded their rights.

nauage the Board. The speeches caused much bar-eching, and the Board adjourned after voting down ommissioner Ayres's last resolution by a tie

AMERICAN AND BRITISH RIFLEMEN.

One of the Americans who surprised the Bruish marksmen with extraordinary scores, and by winning several first and second prizes, at the recent don rifle meeting, has returned nome. He says there is no hope of getting British teams to come to this country to compete for the Pasma, until they adopt the egunization tactics of American team shooting. They are doubtful of their ability to compete successfully with American riflemen and their rifles; and it is in possible to create entirusiasm enough to secure another scription to pay the expenses of an English team.

The success of the American team, he thought, was Apvertean teams of the past, in his opinion, had looked more to their organization than anything else, and after electing a captain, the members recognized in him an s members of the past teams have considered individnal shooting as of the utmost importance, aiways hoping that when they returned to their home they could re for to their scores with profe, and say. " If they had all done as well as I, we could have wou." As to rifles there was no doubt that American rifles were in some Gilder, Fenton and Humphreys, members of the last British team, are now using an American rifle, whice in the outer portion; and of the Radiate.

British team, are now using an American rifle, which they consider the best of American arms, and better than twit home make. In time it is thought that many others will shoot with American rifles, to the exclusion of English styles.

Speaking of the Wimbledon Range as compared with Creedmoor, this marisman said that the Range Committee at Wimbledon had made a mitake in the designation of the targets at the western and of the range. The brought the sun in the afternoon airceity in the face of the marksman and made it very difficult and impossible, at times, to distinguish the letter or figure over the target to which he might be assigned. The error of shooting at the wrong arget was more common at Wimbledon than at Creedmoor for this reason, and was shown in the fact that one of the best and mest popular marksman fixed at the wrong larget tourteen times in one day. The Wimbledon Range managers were to be commended, he thought, for their siriet and absolute impartiality in the cuforcement of the rules.

## THE STATE FAIR.

Utica, Sept. 5.-The subjects for discussion at the State Fair, which will open here next Tuesday. have just been announced. The meeting will be held in the Common Council rooms, in the City Hall, beginning at So'clock. There are 2,753 entries to the fair. George Chambersain, of Southport, and J. M. Seymour, Clark's Mills, have the largest number of individual entries; those of the former being fifty, while the latter has forty-eight.

All the superintendents are now at their posts. The approaches to the Fair Grounds are being generally im proved by the city authorities. The N. Y. C. and H. R. R. Company has constructed a side-track to the grounds, at the terminus of which a platform 300 feet long has been built. The lower end of the grand stand is being changed into a ladies' sitting room. Colored women changed into a ladies' sitting room. Colored women will be in attendance here, and the room will be furnished with chairs, settees and tables. The entrance roads to the Fair will be sprinkled every day. Mounted polloe will patrol outside the grounds. Superintendent Bowen states that no one except exhibitors will be permitted to advertise on the grounds, and there will be no advertisements on the fences. The headquarters of Vice-President Geddes will be in the bortsern end of the grand stand. Next to his apartment a large room will be furnished for superintendents, clerks, and those in charge of the machinery. The executive building is now ready for occupation. The room on the south end will be occupied by the Hon. Horatic Seymour, President of the State Agricultural Society. Secretary Harrison, with his assistants, will occupy the centre room. Superintendent Bowen has the third room.

small ragged boy entered an oyster hous set point did not much exceed, if it reached, \$27,000,000, and that the highest point was reached in 1874. This amount included all the forms of contingent liability incurred for internal improvements, money due the school and United States sur-

plus revenue funds, etc. The contingent debt was, forward and advocated by Democrats, All the LIFE OF THE SILURIAN AGE. BY S. W. FORD.

> OBSERVATIONS ON THE LIFE OF THE SILURIAN AGE AS A WHOLK. Having successively considered the life of each of the Stiurian periods, beginning with the oldest, it seems fitting that I should now attempt to bring together the more prominent facts that have been noted respecting that life, to the end that their significance and bearings may be the more clearly and readily appreciated and understood. It will be the aim of the present article to do this; but first of all I may be permitted to offer a few additional observations upon the rock deposits of the Silurian

The opening period of the Devonian Age was marked by the introduction of numerous types of fishes, some of them of formidable proportions; and these, it is safe to say, were the undoubted rulers of the Devonian seas. The supremacy so long maintained by the Silurian Cephalopeds had, therefore, clearly been transferred to the Devenian Fishes, and the "Age of Molinsks" was over. This, however, does not imply that Cephalopods and other Moliusks did not continue to exist in force, but only that they were no longer the dominant forms. But during the time that had clapsed between the commencement of the Primordial period and the close of the Oriskany, over seven notes of sediments had been laid down over Eastern North America (this being the maximum thick-

has been derived.

ness of the Silurian beds along the Appalachian COMMISSIONERS OF JERSEY CITY IN DIFFI- region), or more precisely, according to Professor Dana, 38,560 feet, the Lower Silurian attaining in this region a thickness of 31,200, and the County, met at the Court House in Jersey City | Upper Siturian of 7,360 feet. Of these 38,560 feet of besis 6,800 feet are innestones, and hence the Silurian Age was one of enormous duration. Pre. principal facts of Silurian life may be summarized Director-at-Large, Edward F. McDonald, the pre- cisely how long it was it is impessible to say; but

In my second article I have given a section showing the order of succession of the Lower Siluman deposits; and, in my fifth, a continuation of the same, to illustrate that of the Upper Silurian rocks. Now, if we were to bring these two sections together, making them overlap a little for the parts repeated, we should get a tolerably correct representation of the arrangement of the Silurian rocks as they are met with m passing from the Admondack region (Archean) of Northern New-York southwestward across the central portion of the State, except that the dip, or inclination, shall have frequent occasion in the present article to refer to the rocks of the several periods, the following vertical section has been prepared, which shows the order of arrangement that would be found to prevail if all of the members of the Silurian system could maywhere be seen horizontally spread out as they were when formed, and in one unbroken pile. (Fig. 1.) In this

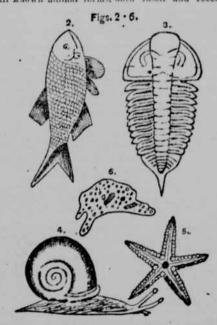
PERIODS.	Fig.1.	EPOCHS.
ORISKANY.		ORISKANY.
LOWER HELDERBERG.		LOWER HELDERSERG,
SALIKA,		SALINA.
NIAGARA.		CUNTON-
	000000	MEDINA.
TRENTON.		HUDSON RIVER. UTICA.
	生活活	TRENTON.
CANADIAN.		CHAZY.
		QUEELO.
		CALCIFEROUS.
PRIMORDIAL		POTSDAM,
ZONE.	Mano C	ACADIAN. I
ARCHILAN,	100 S	

Column of the Siturian Formations of North America.

column the blocked areas represent lime stone; these horizontally lined, mate or shale; the coarsely or sandstone. This section can hardly fail to be found marks which follow.

When we consider the almost endless variety of | Fps. 7.—Restoration of Free spectua bllobus. Salest, from the form and pattern which prevails in the animal | British Upper Silarian (Ludiow group). Restoration of the specific production kingdom as it exists to-day, we are at first disposed to believe that a large number of independent plans have been followed in the construction of animal forms. But the critical study of the animal world has enabled naturalists to show that the number of these independent or ultimate plans of structure is ery small,-five being the number new generally admitted -and all hving beings are, at the presen time, in final classification, ranked either as Forte. ranks in the shape of the Eurypterials. Fig. 3 of brates, Articulates, Mollaska, Radiaccs, or Protozoans. Of these the highest are the Veriebrates; and, as I have shown in my sixth article, they were also the last to appear in geological time.

The fundamental feature of the Vertebrate type is the existence of an internal column composed of numerous joints or vertebre, which, with their appendages, make up an interior bony framework or skeleton; of the Arriculate, the division of the structure lengthwise into a number of rings or egments-the hard parts, when present, being external and not bony; of the Molluscau, the absence of both jointed structure and internal skeleton-the body being soft, though symmetrically disposed on either side of a median plane as in Vertebrates and Articulates, and having, like the latter, the hard parts, when these exist, on the outside or the repetition of like parts about a radial centre or vertical axis. The Protozonas exhibit but little specialization of parts at best, and are often destitute of any definite form. The structures which they unitedly secrete are, however, frequently of great utility as well as of exceeding beauty (take, for example, the sponges), and hence, though at the bottom of the animal scale, they are by no means to be despised. Iflustrations of these five general types of structure are given below. The fact that they include all known animal forms, both fossil and recent,



evinces that they are not mere creations of the mind of man, or human conveniences, but the fundamental plans upon which all organic beings have

been built.

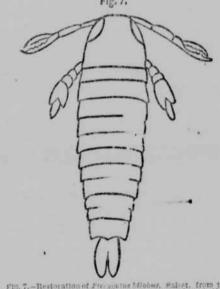
lurian species described up to 1872, is, according to

The state of the s	40
Fishes	* week
(Triboites	1.073
Other Crustaneaus	345
Worms	A 75-17
(Cephalopods	1,622
Pteropods	1.51
Heteropods	2500
( Gasteropods	1,320
Acephala	1,086
Brachtopods	1,567
Bryozoans	3354
Crinids	4710.00
(Cyatida	173
(Asterioids (Star Fisnes)	715
( Polyp Corals	159
Sponges and other Protozoans	3.00
Of doubtful relations	- 4

10.077 making, as we see, a total of more than 10,000 species. This, however, is far from the actual num-System, these being the sources whence all the inber known, since many yet remain to be described, fermation we possess concerning the life of the age and new ones are almost constantly being discovered; but it serves to give us some idea of the richness of Silufian life in species. The richness of certain species in individuals has already been referred to and need not here be dwell upon.

The next point for us to note is the large number of classes displayed in Silurian time as shown by the foregoing list, which includes all those of which I have specially treated in former articles. But it | Canadian period; to which may be added the introwill be remembered that these did not all start out together at the same time or in the same period, but, on the contrary, were, in large part, successively introduced; and that each has its own peculiar history. The order of their introduction is, in certain respects, in keeping, though for the most part at variance, with what we should be led to expect on the theory of descent with modification; but the manner of their introduction, in the present light of our knowledge, appears to be utterly inexplicable on this or any other transformation theory. I shall endeavor to point out the more conspicuous points of agreement and disagreement further on. The under the following heads: · 1.—CLASS REPLESENTATIONS BY PERIODS.

The classes represented in the Premodial period were the following: Crustaceaus and Worms among Articulates; Gusteropods, Fleropods, Brachiopods and Bryozoans (provided the Graptolites are of the latter class) among Mellusks; Lebinoderms in the shape of Cystids among Radiates: and Porifera or Spanges among Protozoans. Some of the supposed Spouges are possibly Rhizopods (another class of Protozoans), as has been suggested by Dr. Dawson. To these, in the Canadian period, there were added Cephalopods and Acepsela among Mollusks, and both Polyp-corals and Acalepas among Radiates. As has already been stated, however, the Graptolites are, by many, regarded as Acalephs; and if so, the class dates from the Primordial. No new classes were added in the Trenton period, and none, indeed, in America, during the whole course of the Upper Silurian; the leading event, so far as the expression of life was concerned, here being the introduction of land plants during the Oriskany period. But in the Old World rocks representing the American Lower Helderberg and Oriskiny Periods, as we have seen. a new class, that of Fishes, appears, and with it a wholly new type of suimal structure, the Vertebrate, or that to which man himself belongs. In this we have, therefore, an event of prime importance, and one which merits more than a passing share of our attention. It will perhaps be felt that the remarkable Upper Silurun Crustaceans, the Forgaterids, should receive some notice here, but these are not looked upon as marking the advent of a new class, but rather of a Furthermore, ail of the new group or tribe. Fig. 7.



classes displayed in the Lower Silarian were in existence at the close of the Upper Schurian.

H.-DISPLAY OF GROUPS OR TRIBES BY PERFORS. The Crustaceaus of the Primordial period represent three distinct groups—the Trilobites, Phyllo-pods and Ostracoids. All of these are continued to the close of the Silarian, and beyond, receiving is the Lower Helderberg period an addition to their article 2 represents a Primordial Phylloped, and fig. 7 of article 6 an Upper Silurian Ostracold. The shell-inhabiting tribs of Worms, or Tubicola, the tribe to which the Primordial Serpulites belongs, extends through the whole Silarian, as does also the naked group of Annelisis, as proved by their tracks and borings. The Orthis group among Brachiopods, which began in the Primordial, runs through the entire system, increasing in force to the close, some of the later Silurian species attaining an extraordipary size. (See article 6.) The Radiate tribe of Cystids, which began in the Primordial, attained, as I have shown in article 4, its greatest expunsion in the Trenton period, and disappeared altogether during the Oriskany. The Crinid or Lilyencrimite tribe, which began a little later, or in the Canadian p riod, attains, on the contrary, its maximum display in post-Silurian time, though wonderfully brought out in the Trenton, Miagara and Lower Helderberg periods. Another tribe, the Graptolites, which likewise began in the Primordial, colminated, as we have seen, in the Canadian period, and ceased to exist as true Graptolites during the Niagara. The remarkable group of cup sponges, of which the Archaeocyathus is the type (see articles 1 and 3) passes from the Primordial into the Canadian, but is unknown in the formations of later periods. We thus see that while new tribes were coming in, old ones were dying out, and so it has been throughout geological time.

III-DISPLAY OF GENERA AND SPECIES BY PERIODS. To treat this subject with any degree of fulness would require a great deal of space, and I shall therefore notice only the more important facts. The dominant forms of the Primordial period werthe Trilobites, these leading in genera and species all others, but the majority of the genera and all of the species end with the period. In the Canadian teriod there appear, along with some of the eld genera, a number of new ones, and an entirely different range of species. In the Trenton period the number of Primordial genera is still further reduced (a single one having been recognized), other genera are introduced apparently to fill up the gaps made by the disappearance of the Primordial types, and the species are again almost wholly The same thing was repeated in the earlier Upper Silurian, after which time the tribe began to decline. But as I have previously stated (article 6) it was in full force when the first of the Eurypterids came upon the scene.

The Ostracolds culminated in the later Upper Silurian, a number of new genera being here added to Leperditis and Beyrichia, which began in the early Lower Silurian and extend, under various specific forms, through the whole system; while to the Primordial Hymenocaris (see art. 2) among Phythopods, there succeeded a few other genera, both in the Lower and Upper Silurian, one of the most remarkable forms being the Ceratiocaris, an Upper Silurian type.

Few additions were made in the course of the Upper Silurian to the genera of Cephalopods that began in the Lower Siturian, but the species of different periods are different. The same is true of Turning, now, to our subject proper, I may first different periods are different. The same is true of consider the life of the Silurian Age with respect to its numerical showing. The whole number of Si-pods were almost constantly receiving new

generic additions; while the old types, at each succeeding period, appear for the most part, under new specific forces, Ot the several Radiate tribes (the Cristde, Cystids, Polyp-corals, etc.), substantially the same may be said in this respect as of the Brachiopods; and even the Sponges, though on a more restricted scale, illustrate in their successional history the same fact or principle. But there is no good evidence that any Silarian genera or species were derived from other genera or species.

IV .- GENERAL OBSERVATIONS.

Patting, now, all the facts together, we find in favor of the development theory : (1) That with the progress of Silurian time there was a rise in the grade of life, the Trilobites (probably near the Phyltopods in systematic position) having added to their hordes, in the later Silurian, a probably higher order, in the way of the Eurypteres group; 'the Phyllopods and Ostracoids attaining at or toward the close of the age their highest expression; Cephalopods, the highest Mollusks, being added in the Canadian period to Gasterpods, Pteropods and Brachiopods (Primordial classes), and Crinids (ranking above the Cystids) appearing after the latter in time, or not until the duction of Vertebrates in the later Upper Silurian : And (2) that throughout Silurian time new genera and species were almost constantly appearing, and further, that many of the genera and species are closely affect; but beyond this the corroborative evidence does not appear to extend.

The facts in opposition to the theory that all Silurian forms have been derived from a common pre-primordial ancestor through the operations of the laws of nature, are, on the contrary, not only numerous, but apparently insurmountable. In the first place, no such fine gradations exist among genern and species as we should expect to meet with on this theory; while the stability of certain generia types as well as of certain specific forms through enormous periods of time, is a positive fact bearing in the same direction, of even greater force. The primordial molinscan genera Lingula and Discina and the aimost equally ancient Lower Silurian genera Nautilus, Khyuchonella, Crania and Plearotomaria still continue to exist in our own seas; while a number of other Lower Silurian genera extend through the whole Paleozoic series, and certain species through several periods, or an entire system of rocks.

Again, the order as well as manner of introduction of the various classes and tribes of the Silurian is widely at variance with the requirements of this theory. If the earth has been stocked with living forms in the way it supposes, we should expect to find in the lowest Primordial bods; first, Sea-weeds, then Sponges and other Protozoans: next, Polyp-corals and Acalephs, with, later on, Cystids and Crinids; next, Bryozoans, Brachiopods, Acephala, Pteropods, Gasteropods and Cephalopods; and lastly, Phyllopods, Ostracoids and Tribolites, the species decreasn number from the Sponges upward through the several tribes or classes. But the facts, as we have seen in article 2, give a contrary rendering, and show that the Cystids preceded the Polyp. corais; that the Brachtopods preceded the Lamellibranchs or Acephala, as, however, on thus theory, they should have done, although accompanied, at the outset, by both Pteropods and Gasteropods, classes above the Acephala in zoological rank; and that the Trilobites and other Crustsceans antedated both the Cephalopeds and Lamellibranchs, and even the Crinids, these latter, as I have before observed, not appearing until the next period. Furthermore, the number of species of Primordial Trilobites is many fold greater than that of all the other classes of the period.

I will now add a few words upon the manner of appearance of the classes and tribes under notice, and with these bring my observations to a close. In the lowest beds in which Tripolites are found at all, we meet with forms having nearly the greatest number of body-segments known in the tribe, along with those possessing the smallest number; with forms of gigaetic as well as of diminutive propertions; and with a rich and varied display of generie types. As I have pointed out in my second article, they do not appear at all in the lowest Primerdial rocks, but, higher up, come suddenly upon the scene, full-armed and full-fledged, and without the exhibition of any premonitory symptoms on the part of the earlier Sponges, Brachiepods or l'teropods, so far as we can discover, of their coming. The Cephalopeds, Acephala, Crinids and Polyps make their first appearance in the same quiet and unexpected way, and the same is true of the Eurypterids and Fishes. In my judgment, the transmutation theory fails to account for these facts; and if animals possess or have ever possessed, r are surrounded or have ever been surrounded by any force or power competent, in the course of ages to evolve an Orthoceras out of an Orthis, or a Ganoid out of a Pterygotus, such force or power remains to be discovered. The abrupt changes of form that are known to occur among certain animals in their arval or embryonic state, have been put forward as affording a probable explanation of the mode of origin of Silurian types; but the facts of Silurian life furnish no evidence of this, and few, I think, will be prepared to believe that the adult life of the Silurian world was in that universally embryonic condition, which the adoption of this mode of explanation would require us to assume it to have been. In view of the whole case it seems to me as though the display of Silurian life had taken place in accordance with a definite plan, and under the immediate supervision of an intelligent Author and Ordainer, whose work it is.

With the above remarks I shall conclude my sketch of the Lafe of the Stiurian Age, though not witnout regret; but if any of my readers should be led, by reflecting upon the racts presented, to study for the first time, or ma deeply, the wonderful record itself of which I hendeavored to give a tolerably comprehensive though necessarily imperfeet account in the present series of articles, the writer will feel that some good has been acc plished, and that he was labored not wholly in vain.

THE UNRULY WINDS.

DAMAGE BY STORM NORTH AND SOUTH-RACES

DETROIT, Sept. 4 .- The steamer Bertschy, bound from Sagmaw to Detroit, sprung aleak off Port Austian reef, on Lake Huron, during the heavy Northwest gale last night. The fires were put out and the steamer was blown upon the rocks near Grindstens City, where she new lies a total wreck. The passengers and crew, numbering forty-six persons, were all saved by the erew of the Life-Saving Station. The steamer

and cargo will prove a total loss.

GETTY-SEURG, Penn., Sept. 4.—Hunterstown, a village five miles northeast of this place, has been visited by a cyclone, which totally demolished the Methodist church, budly damaged the school buildings and unroofed a number of dwelling-houses and other buildings in the town and vicinity. The path of the storm was only about sixty feet wide, and ran north

and south. The cloud was funnel-shaped. NEW-ORLEANS, Sept. 4 .- No through trains have arrived since Monday by the Jackson Railroad. The delay is caused by a wash-out and the wreck of a passenger

Bosron, Mass., Sept. 4 .- The swimming match between Captain Weob and Captain Paul Boyton, which was set down for to-day at Nantasket Beach, has been postponed because of the rain. The sea at the leach is quite rough. The maten will take place at 9 a. m. to-morrow abould the weather prove fair. The Beacon Park races were also postponed.

SILVER-MINING IN MAINE.

CORINNA, Me., Sept. 4 .- A silver mine has been opened here. The first assay of surface ere showed \$9 of gold and thirty-aven onness of slives, lead and copper per ton. The last assay made since sinking the shafts to the depth of eleven feet shows \$10 of gold and sixty-eight ounces of silver, besides lead and copper. Persons are prospecting in Corinna and in

HOW BUTLER MEN ARE TO BE TREATED. Boston, Sept. 3.-The Democratic State Central Committee held a meeting yesterday afternoon at which it was decided to answer the communication of August 6 from the Committee of Butler Democrats in regard to helding a joint State Convention. The substance of the reply is that the regular Democrats cau-not recognize the Butler party as Democrats, but this the convention of the former will be held soon, to which all Democrats are cordially invited to send designates.